

# Bibliometric Analyses and Visualizations

Visualizations Associated with Cases 1-7 from:

**New data-related roles for librarians: Using bibliometric analysis and visualization to increase visibility of research impact.**

*In Handbook of Research on Knowledge and Organization Systems in Library and Information Science.*

Mani, N.S., Hayes, B.E., Dodd, A., Yu, F., & Cawley, M. (2021).



UNIVERSITY LIBRARIES  
Health Sciences Library

# Case 1: Library Partnership with North Carolina Translational and Clinical Services Institute (NC TraCS)

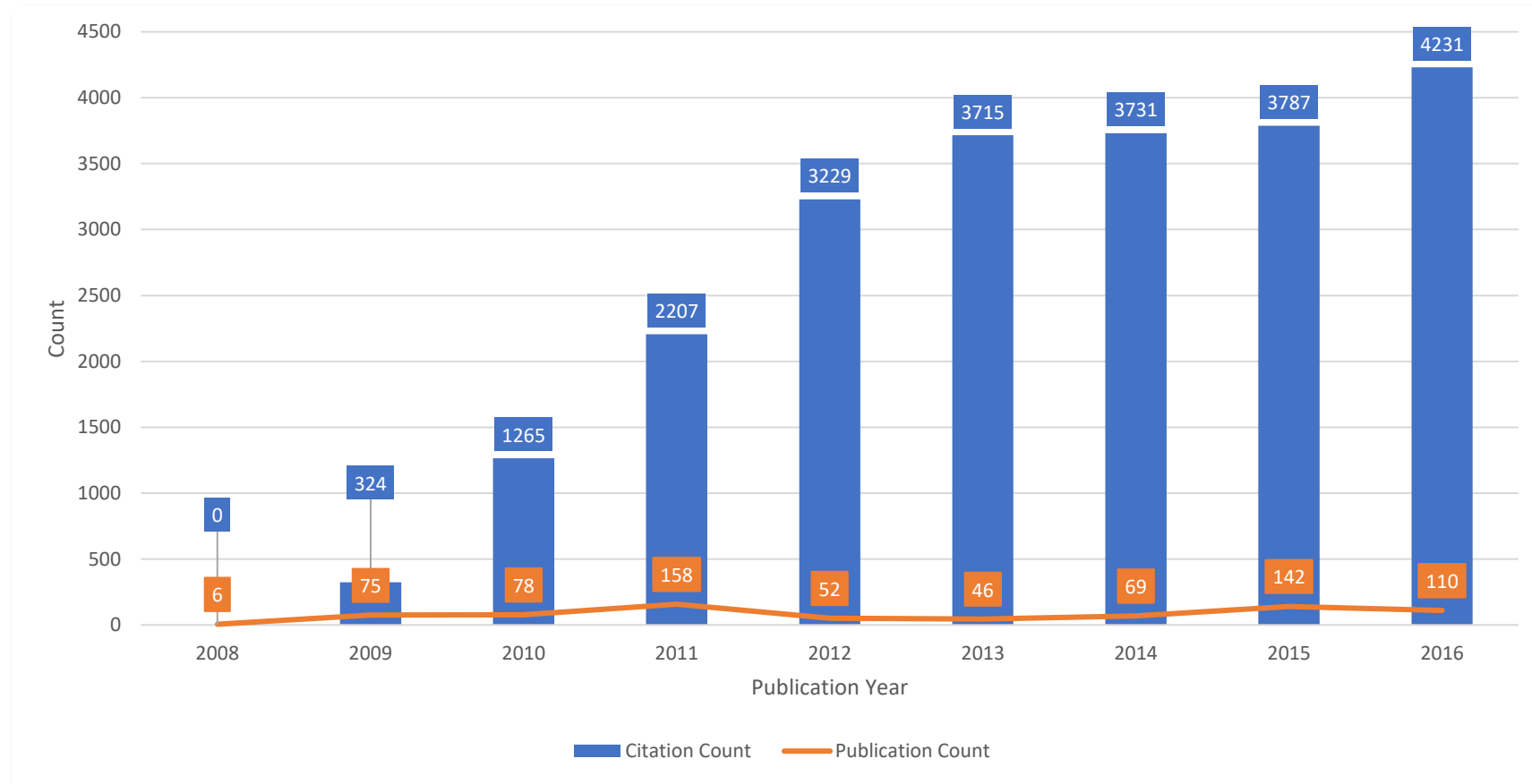


Figure 1. Scholarly output by year and total citation counts of NC TraCS-supported publications (2008–2016) ( $n = 736$ ) (Image adapted from Yu et al., 2020.)

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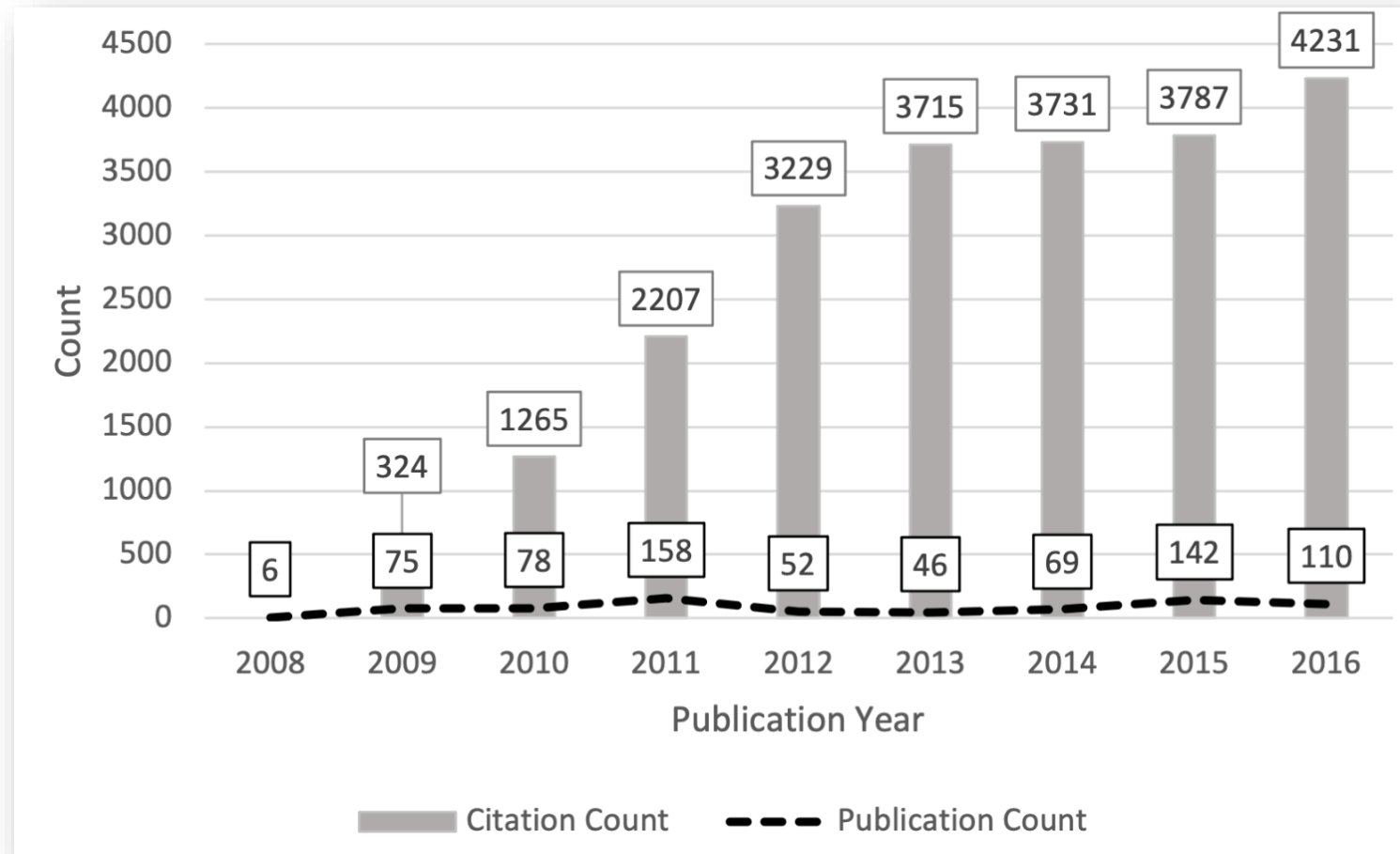


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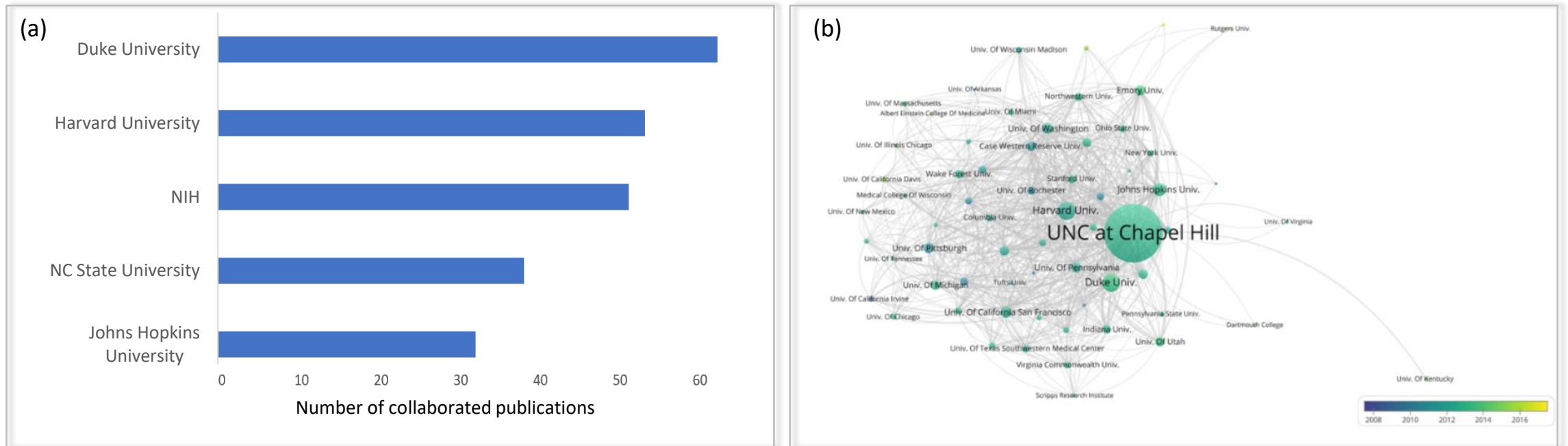


Figure 2. (a) Top external collaborated institutions of NC TraCS-supported research; (b) collaboration network of NC TraCS-supported research with other CTSA institutes (n=65). (Adapted from Yu et al., 2020).

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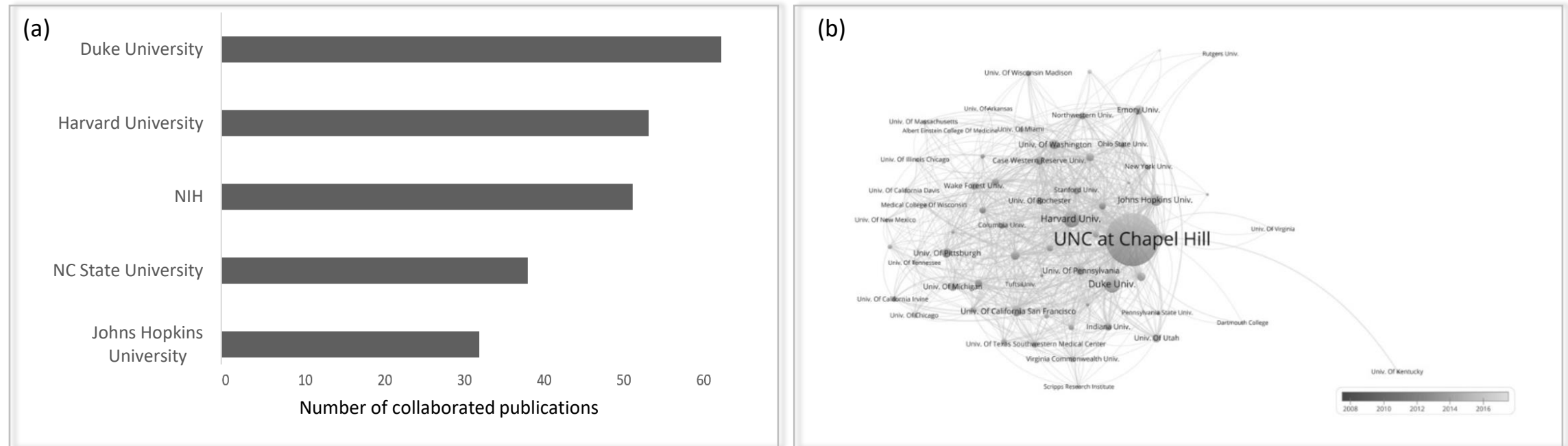


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## Case 2: Supporting Curriculum Transformation for Eshelman School of Pharmacy (ESOP) Through Research Topic Analysis

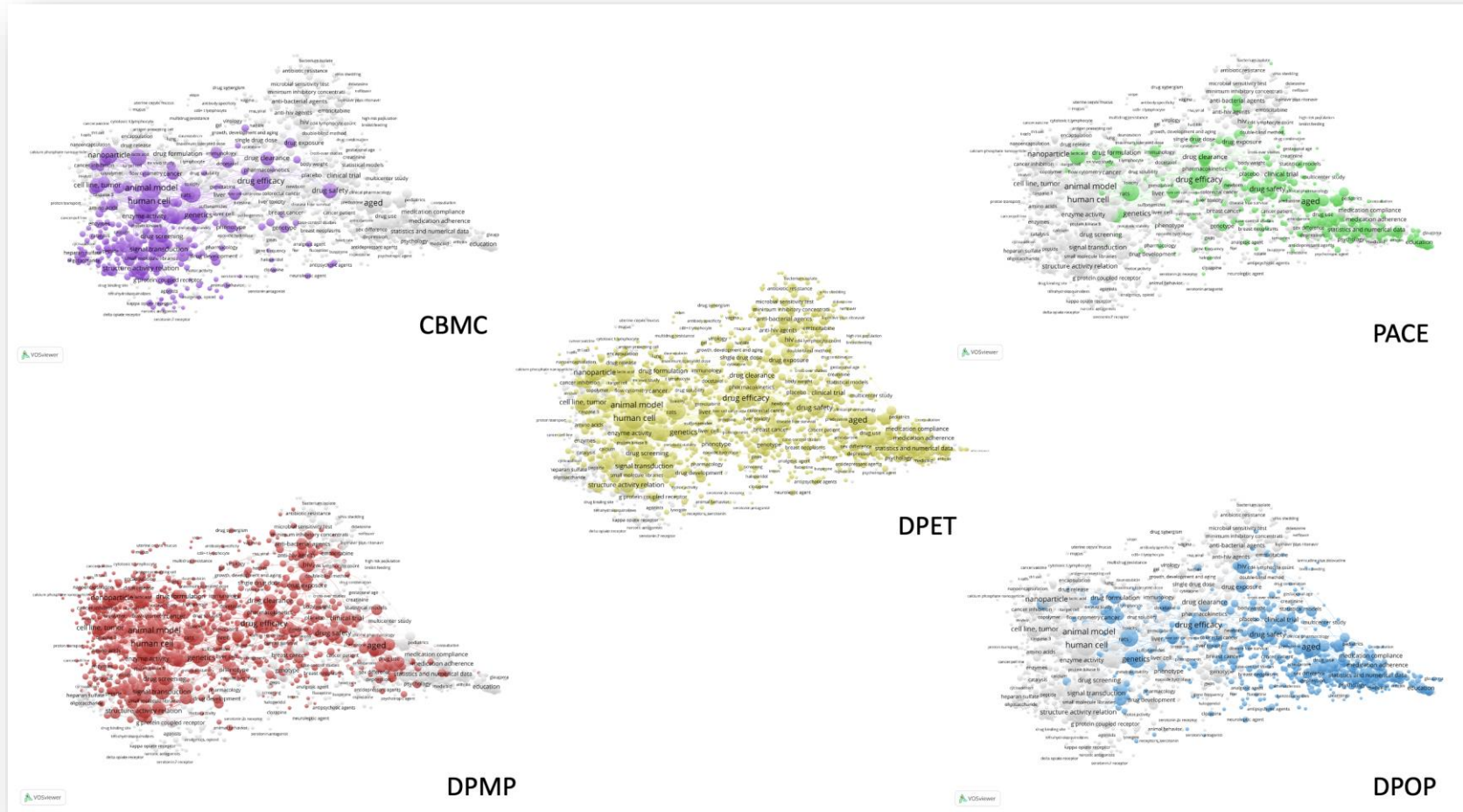


Figure 3. Combined topic analysis for five ESOP divisions illustrating depth at which research areas, based on keywords identified through curriculum mapping, have been addressed. (Image adapted from Dodd et al., 2018.)

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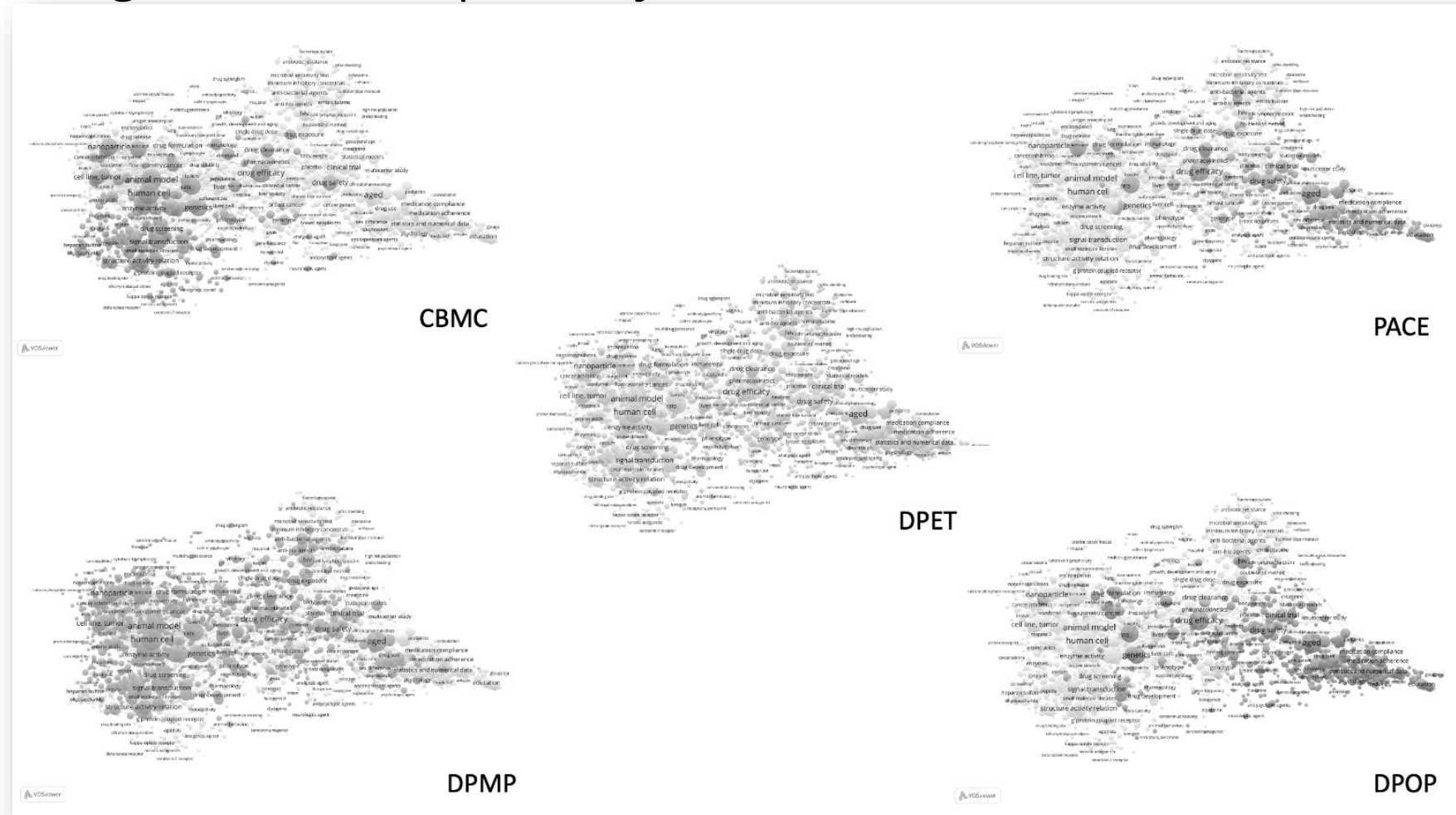


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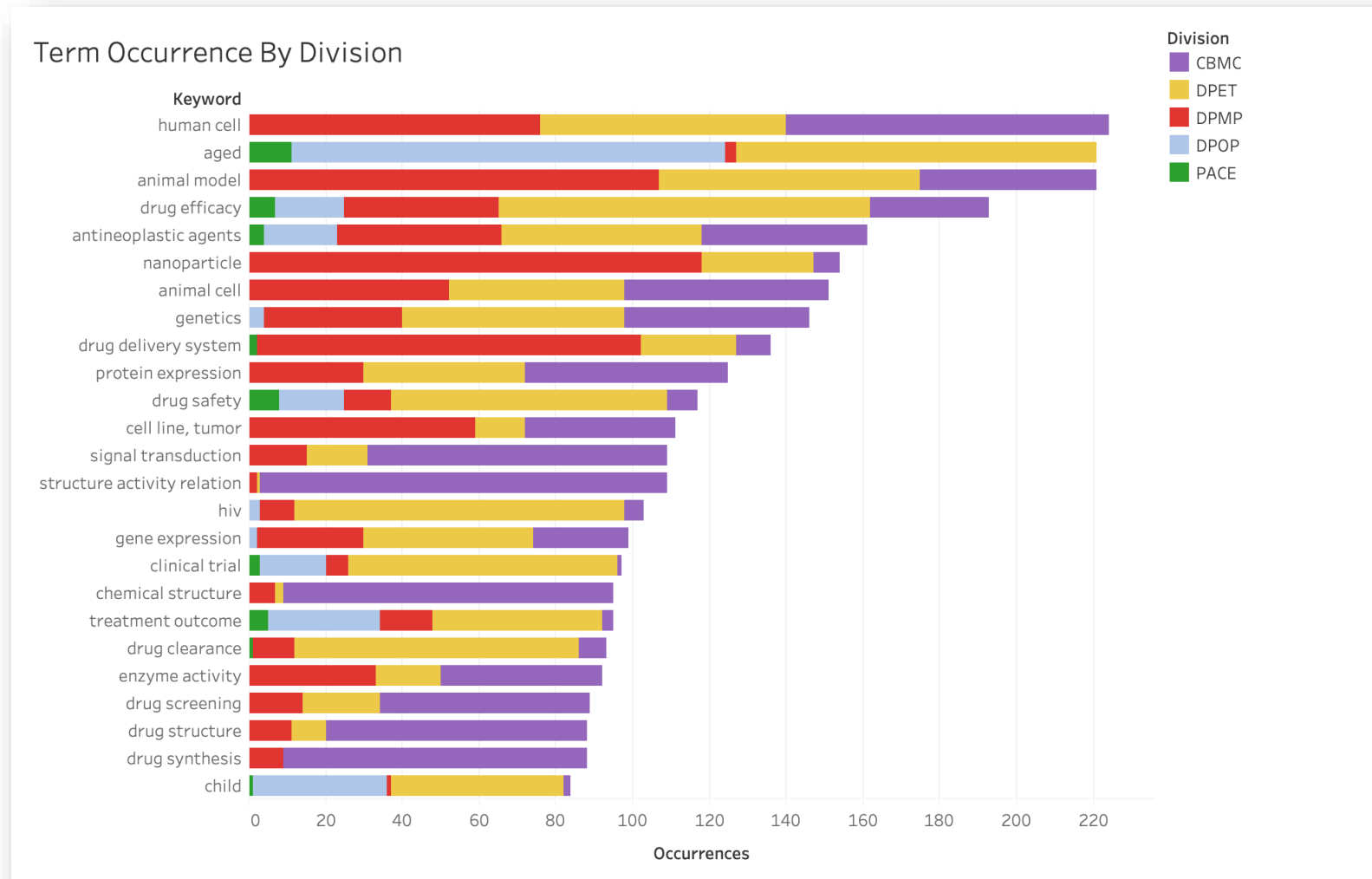


Figure 4. An interactive dashboard showing the top keyword terms being researched for each ESOP Division. (Image adapted from Dodd et al., 2018.)



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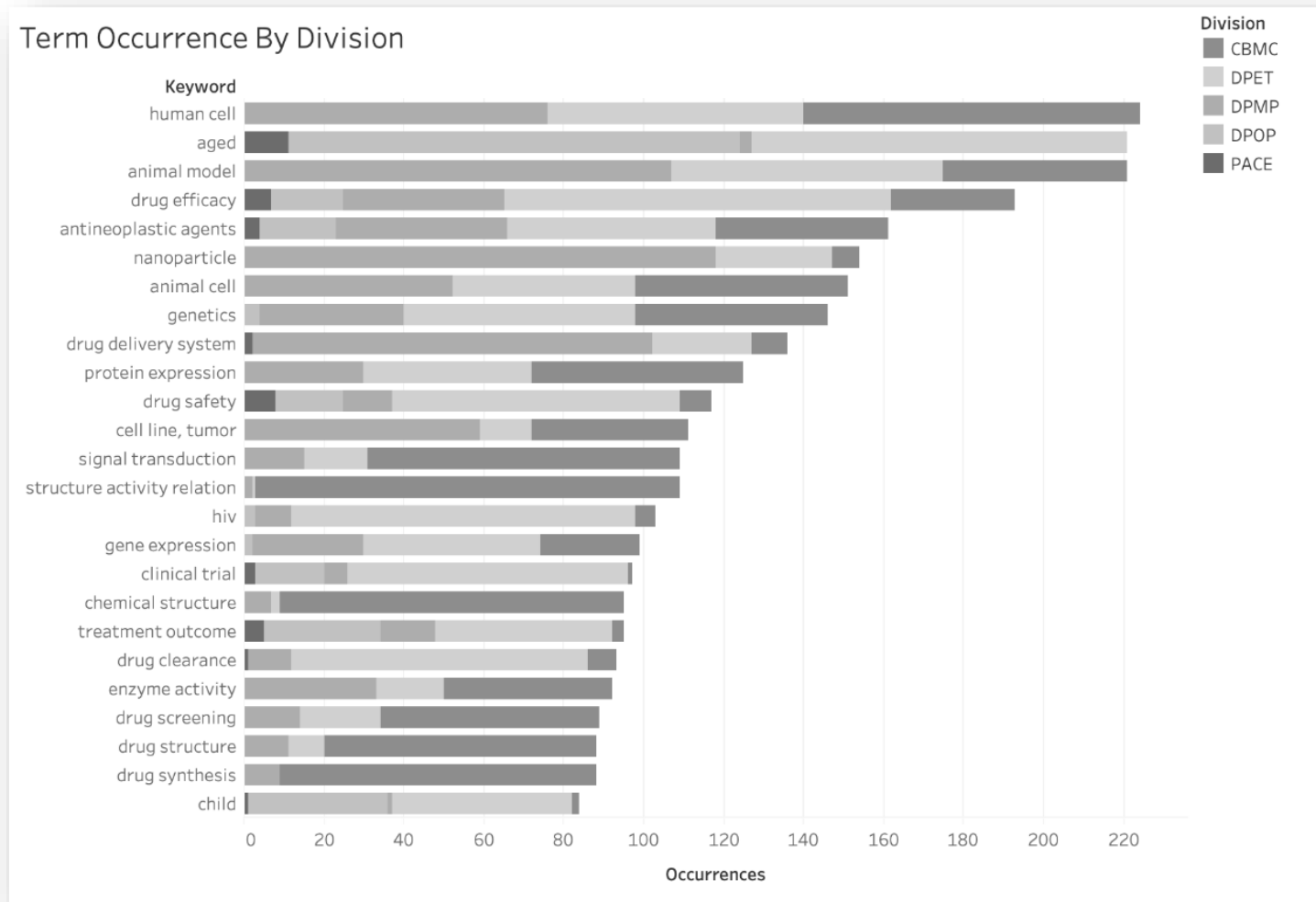


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## Case 3: Research Collaboration with UNC Global

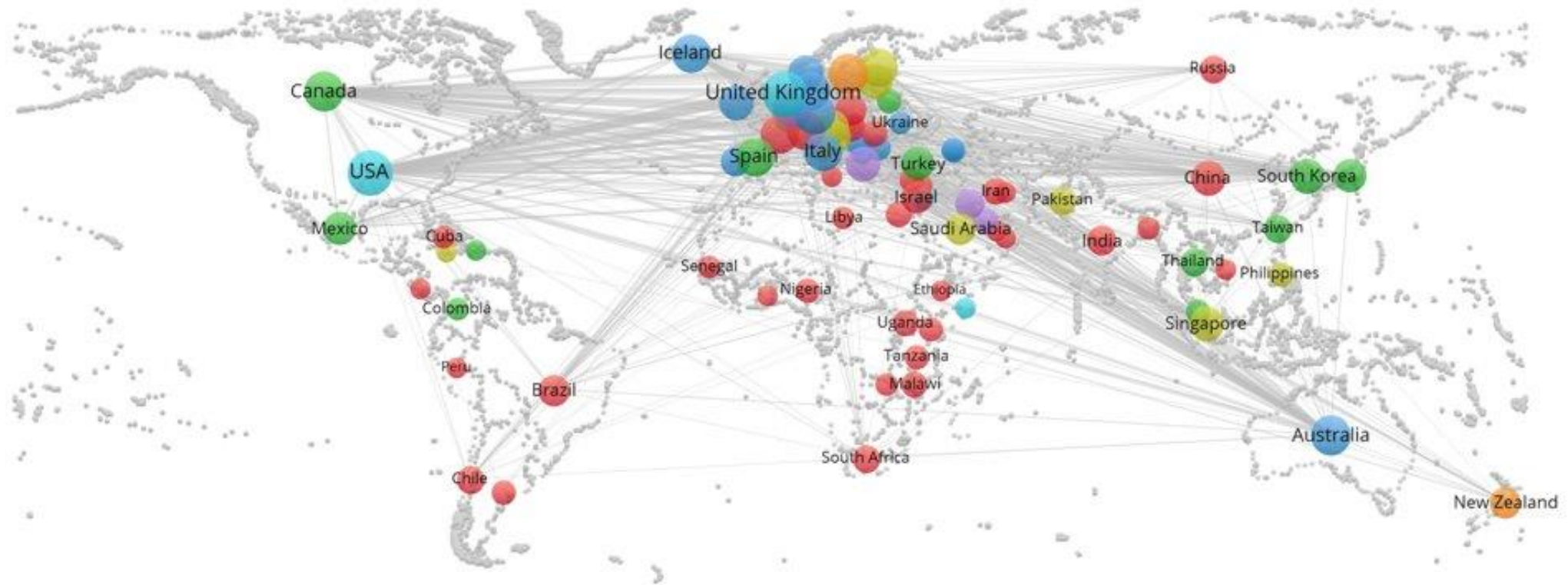


Figure 5: Global collaboration identified from joint publications between UNC-CH and King's College London (2006–2018).

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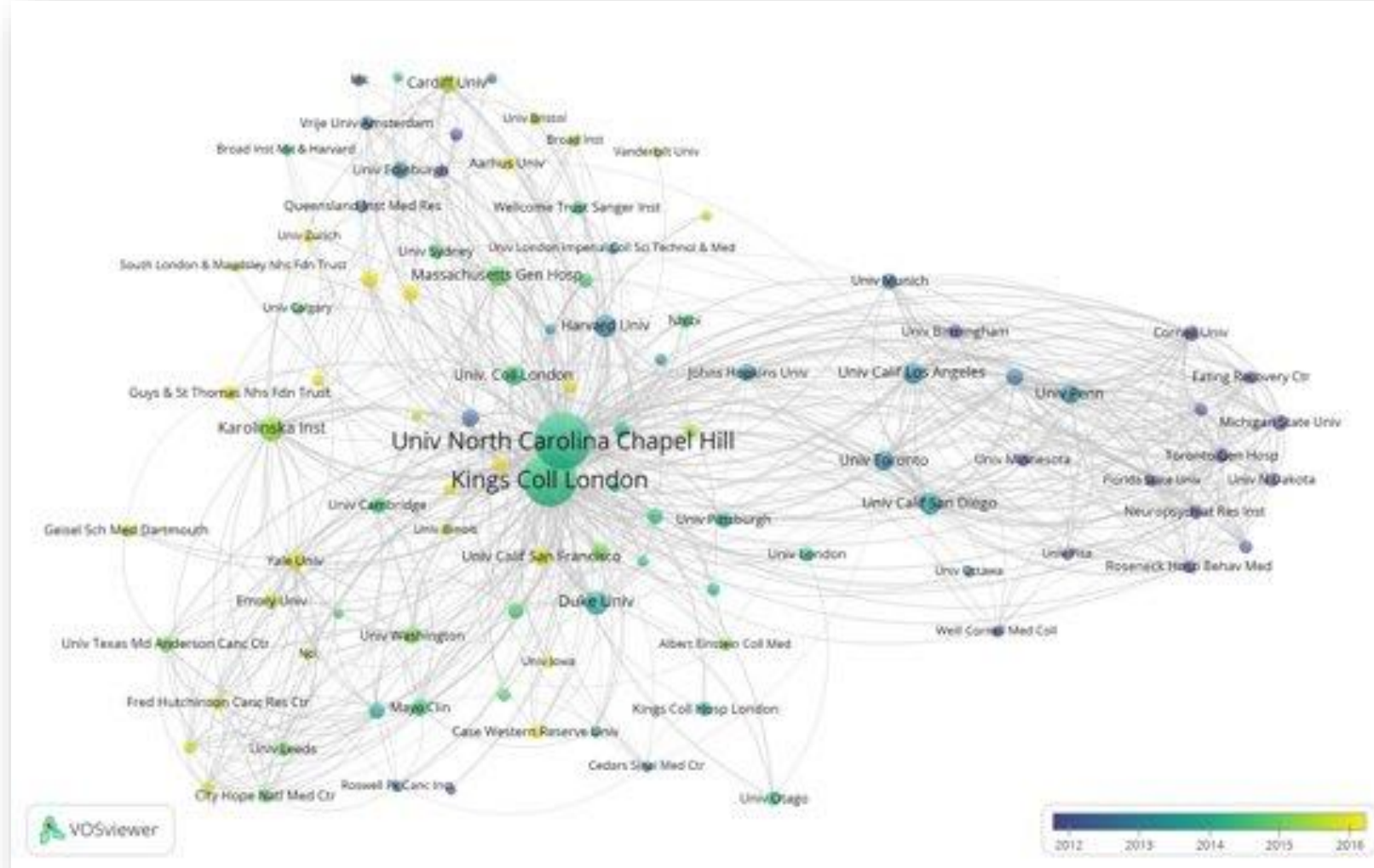


Figure 6: UNC-CH and King's College collaboration network based on joint publications produced between 2006–2018.

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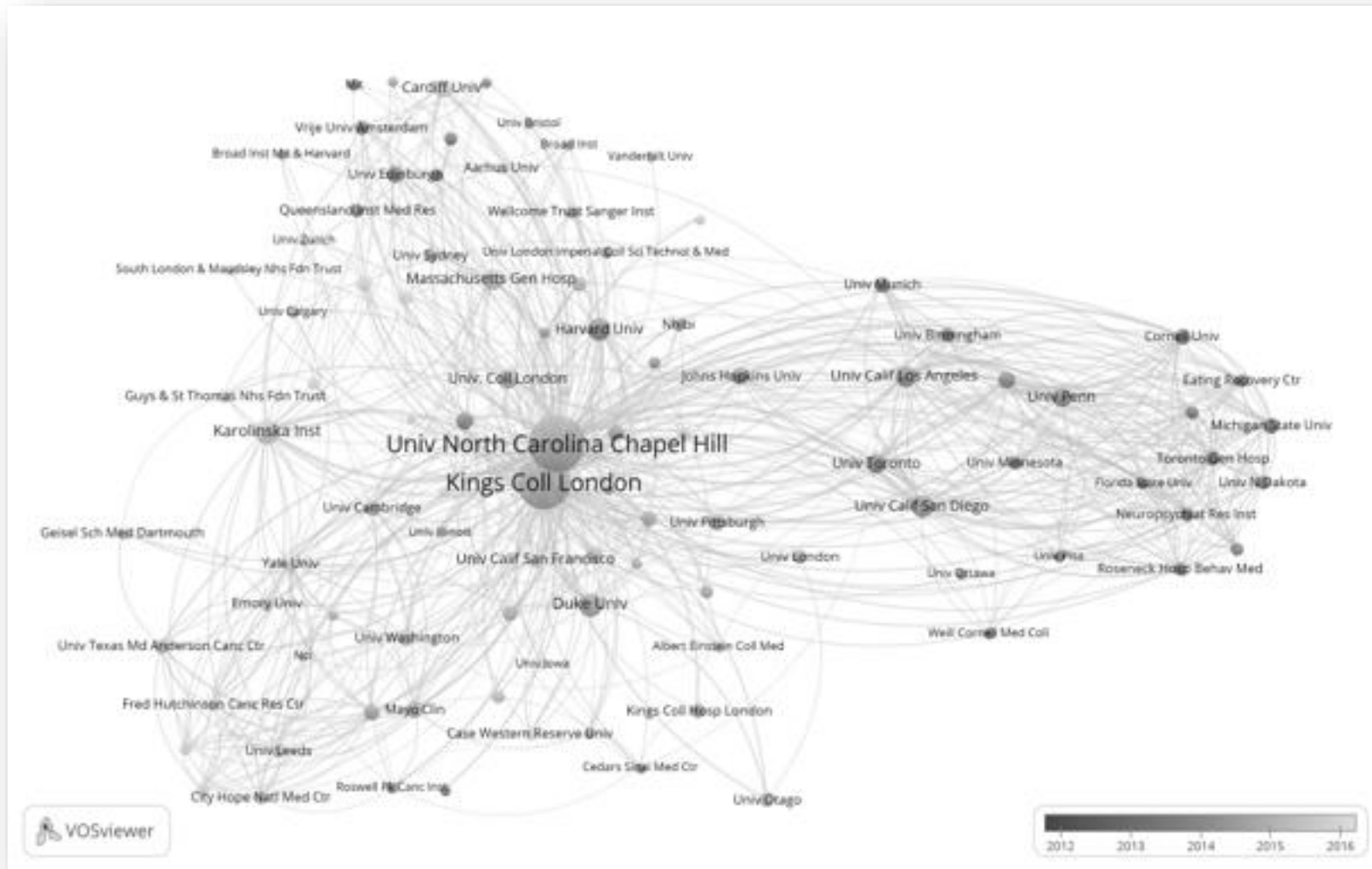


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## Case 4: On-Demand Analyses of Current Research Areas Published by Gillings School of Global Public Health (SPH)

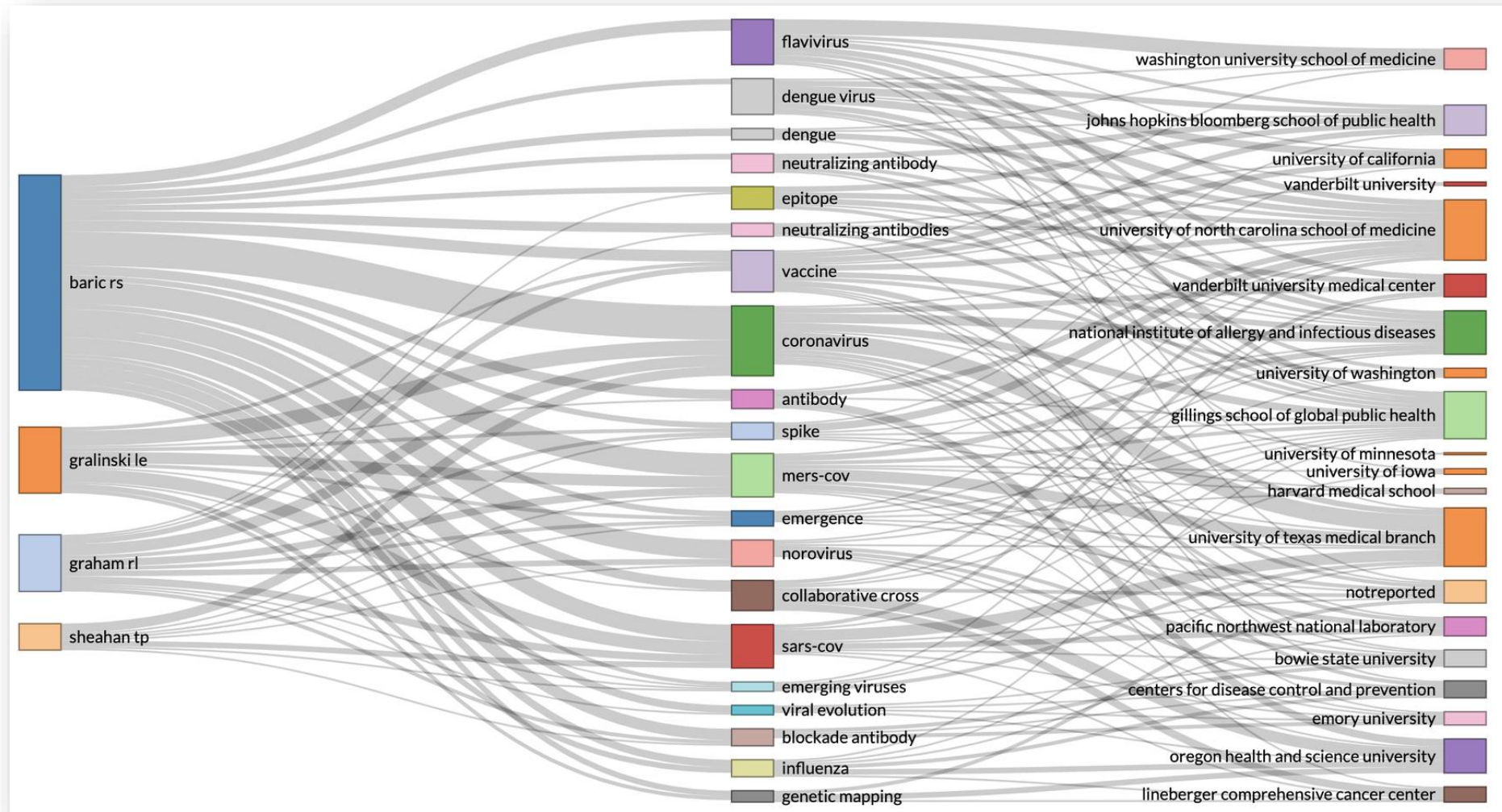


Figure 7. Three fields plot to illustrate SPH coronavirus research by author and associated keywords and institutions (Hayes & Dodd, 2020).

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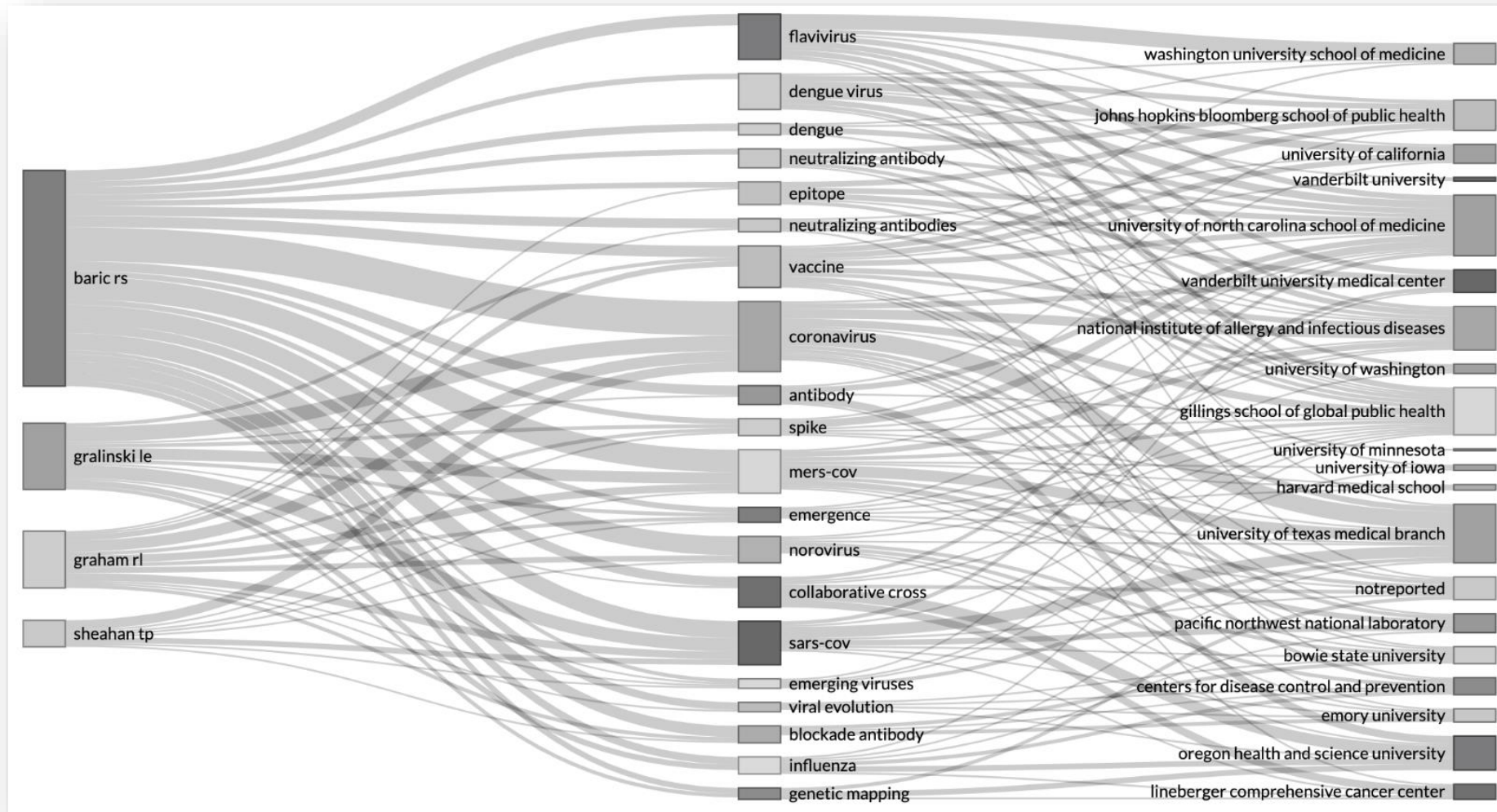


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Figure 8. Treemap chart to visualize the 50 most frequently occurring author keywords in articles pertaining to the area of Health Equity, authored by Gillings School of Global Public Health faculty (Hayes & Dodd, 2020). (Note this figure expands on black and white version found in text of Mani et al. 2021.)



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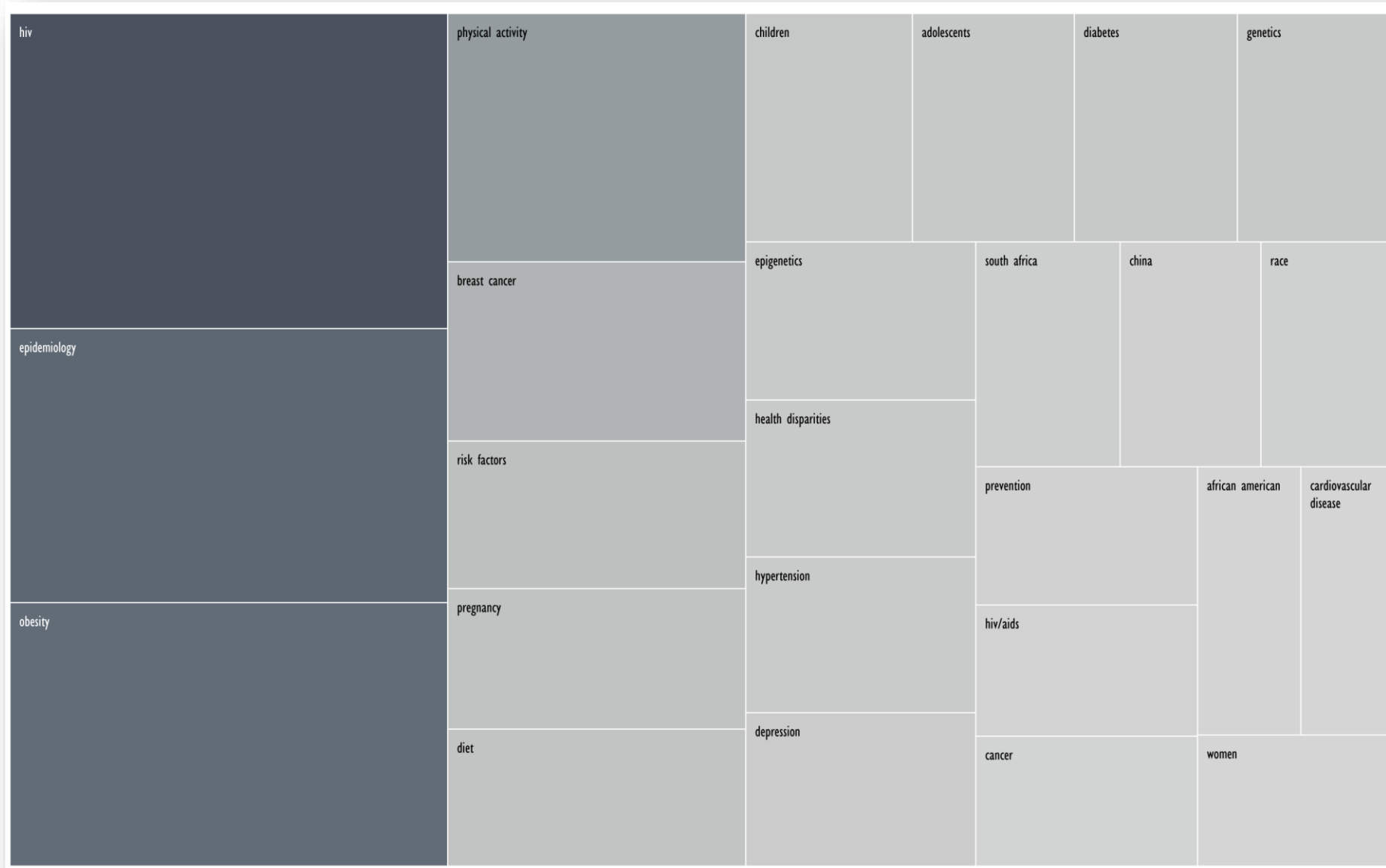


Figure 8. Treemap chart to visualize the 25 most frequently occurring author keywords in articles pertaining to the area of Health Equity, authored by Gillings School of Global Public Health faculty. (Adapted from Hayes & Dodd, 2020)

## Case 5: Multiple-Data Genre Analysis

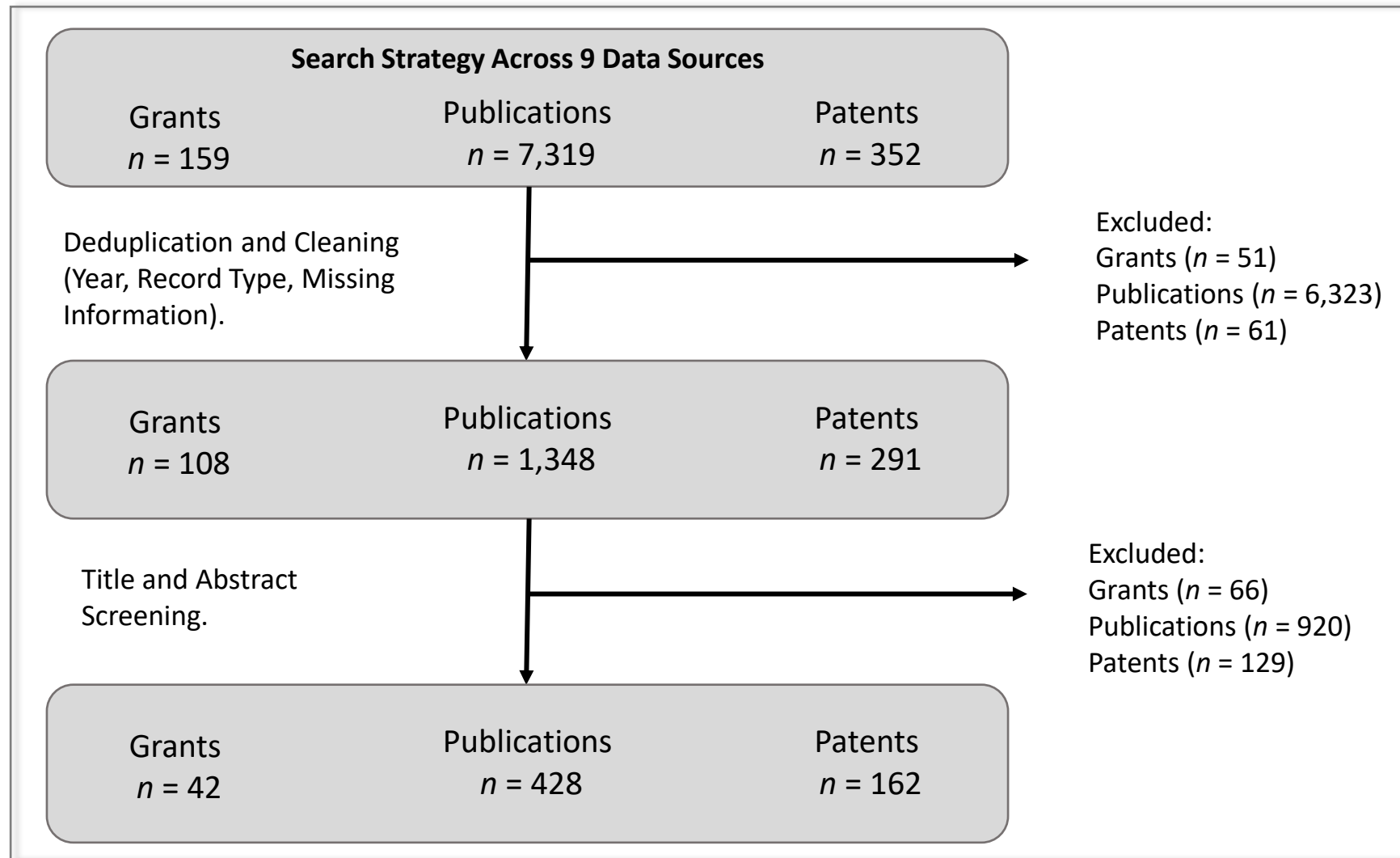


Figure 9. Data collection and screening. (Adapted from Xing et al., 2019.)

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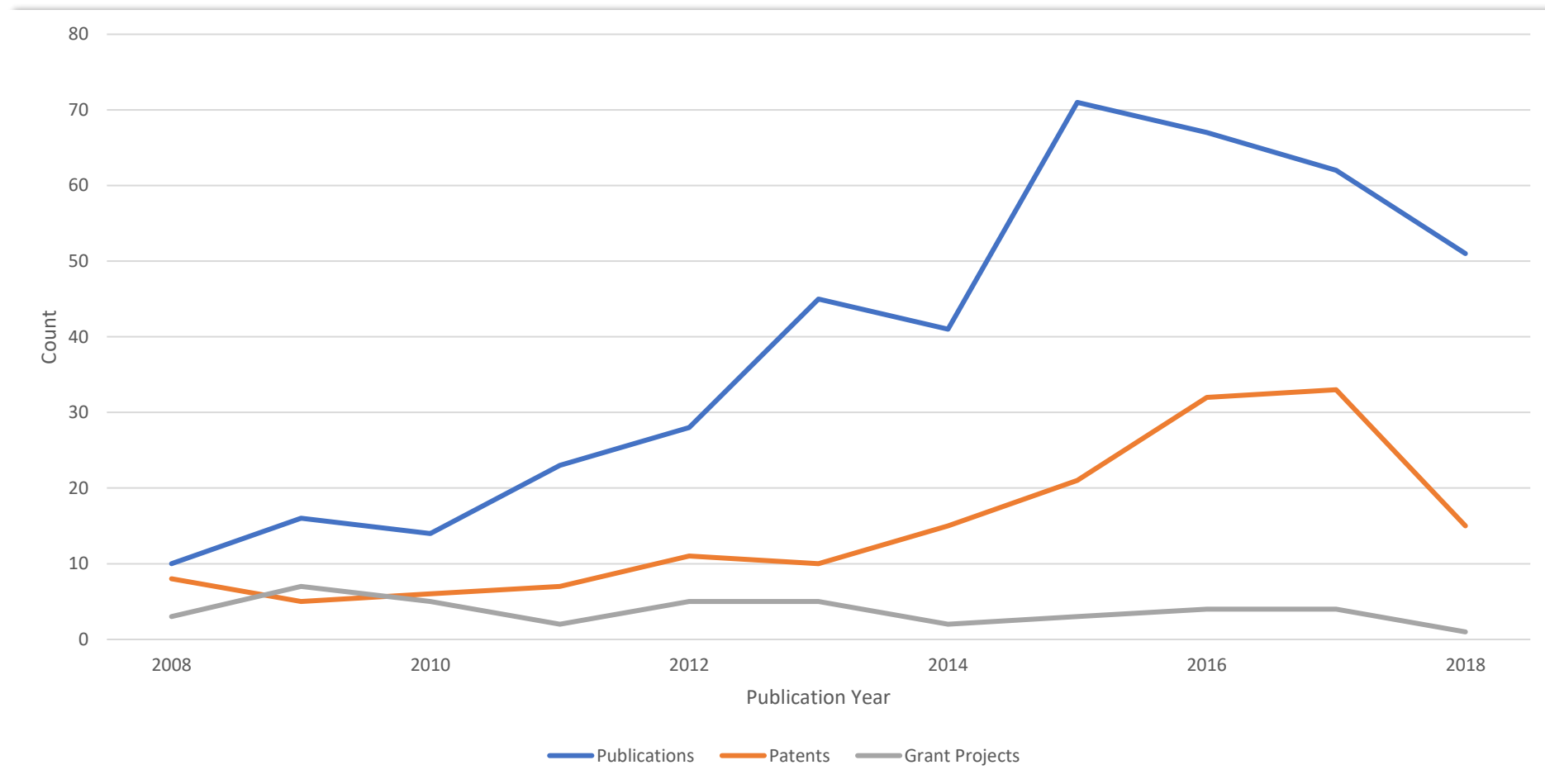


Figure 10. Number of grants, research publications, and patents pertaining to conversational interfaces for health between 2008 and 2018. (Adapted from Xing et al., 2019.)

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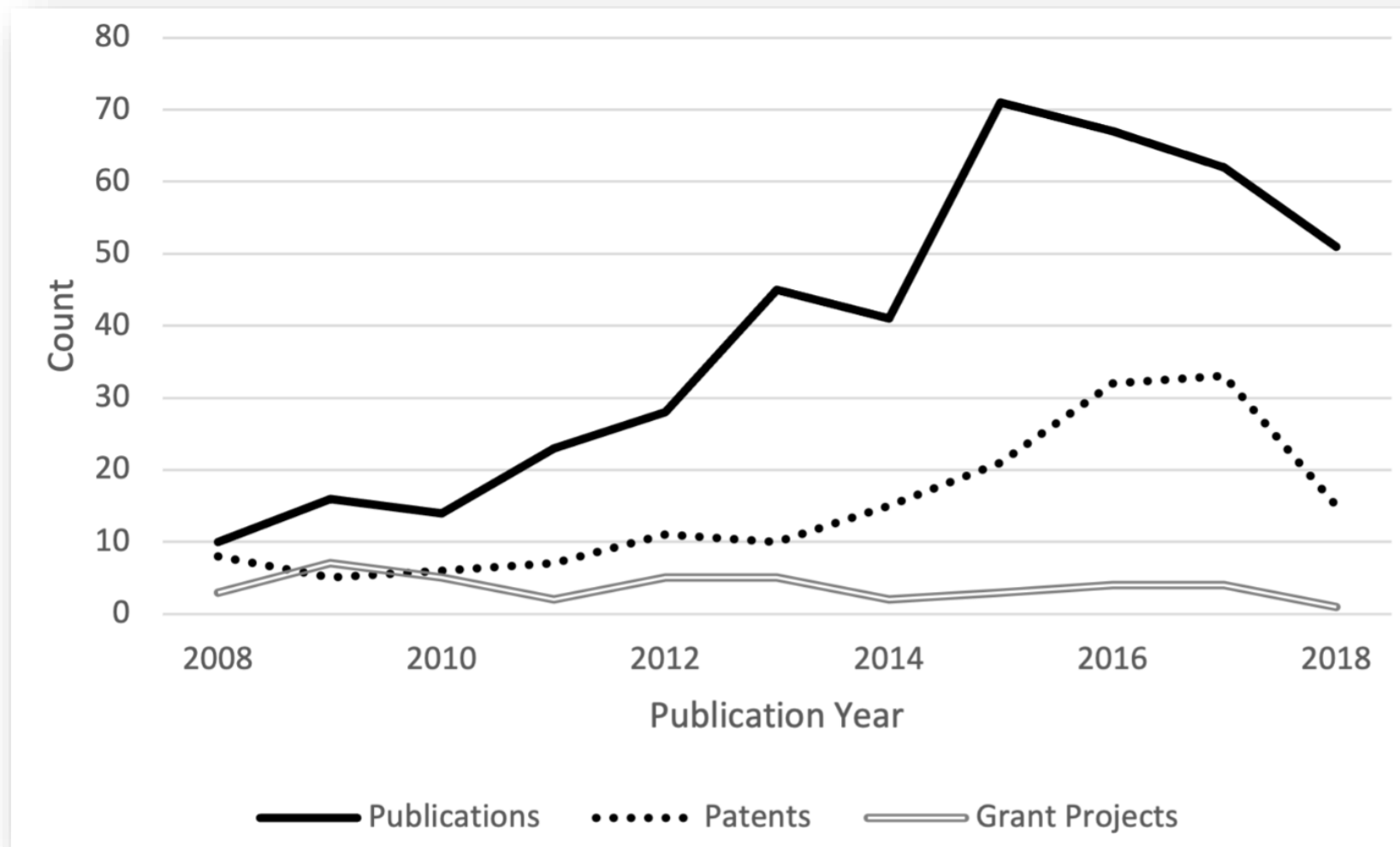


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## Case 6: Original Research on Caribbean Nurse Capacity

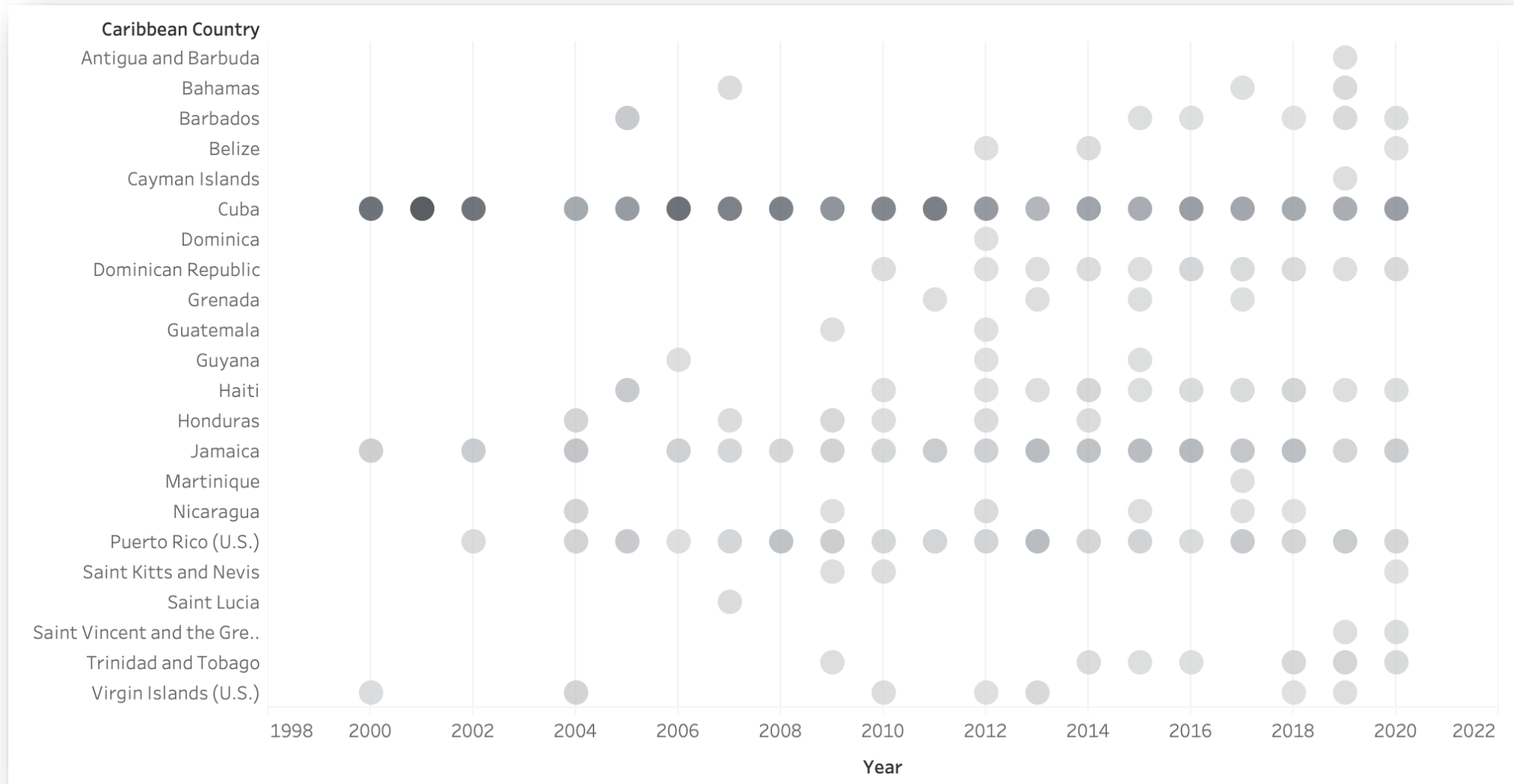


Figure 11. Number of publications per year by Caribbean countries and territories. Darker shading indicates larger total number of annual publications.

## Case 7: Using Machine Learning to Identify Relevant Studies Around Health Information Systems (HIS) Ethics

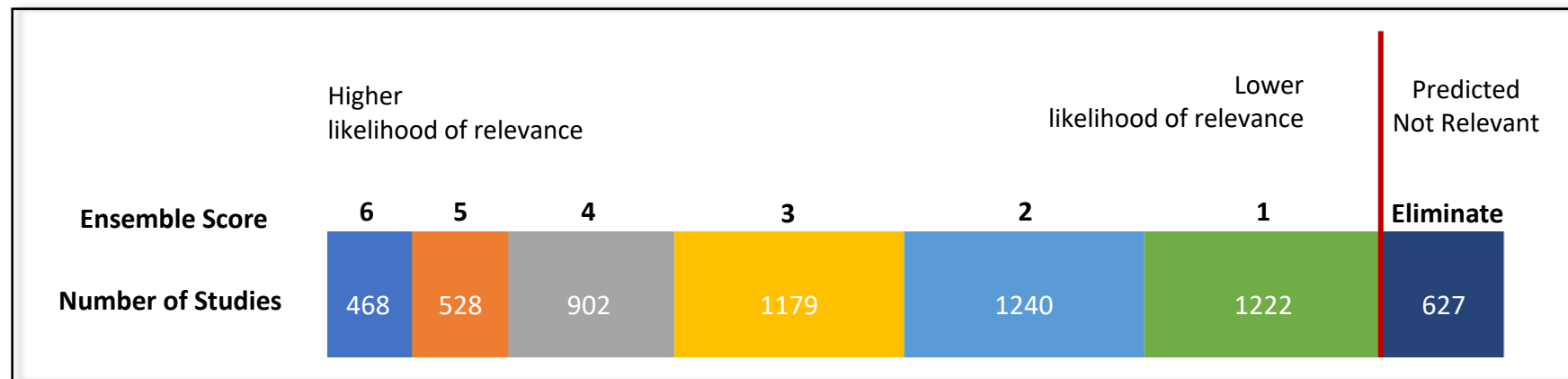


Figure 12. Results of machine learning to prioritize search results for manual screening. Studies with a high ensemble score are more likely to be relevant.

## Case 7: Using Machine Learning to Identify Relevant Studies Around Health Information Systems (HIS) Ethics

	Higher likelihood of relevance			Lower likelihood of relevance			Predicted Not Relevant
Ensemble Score	6	5	4	3	2	1	Eliminate
Number of Studies	468	528	902	1179	1240	1222	627

Figure 12. Results of machine learning to prioritize search results for manual screening. Studies with a high ensemble score are more likely to be relevant.

# Additional Visualizations

Provided only in color and not included in Mani et al. 2021.



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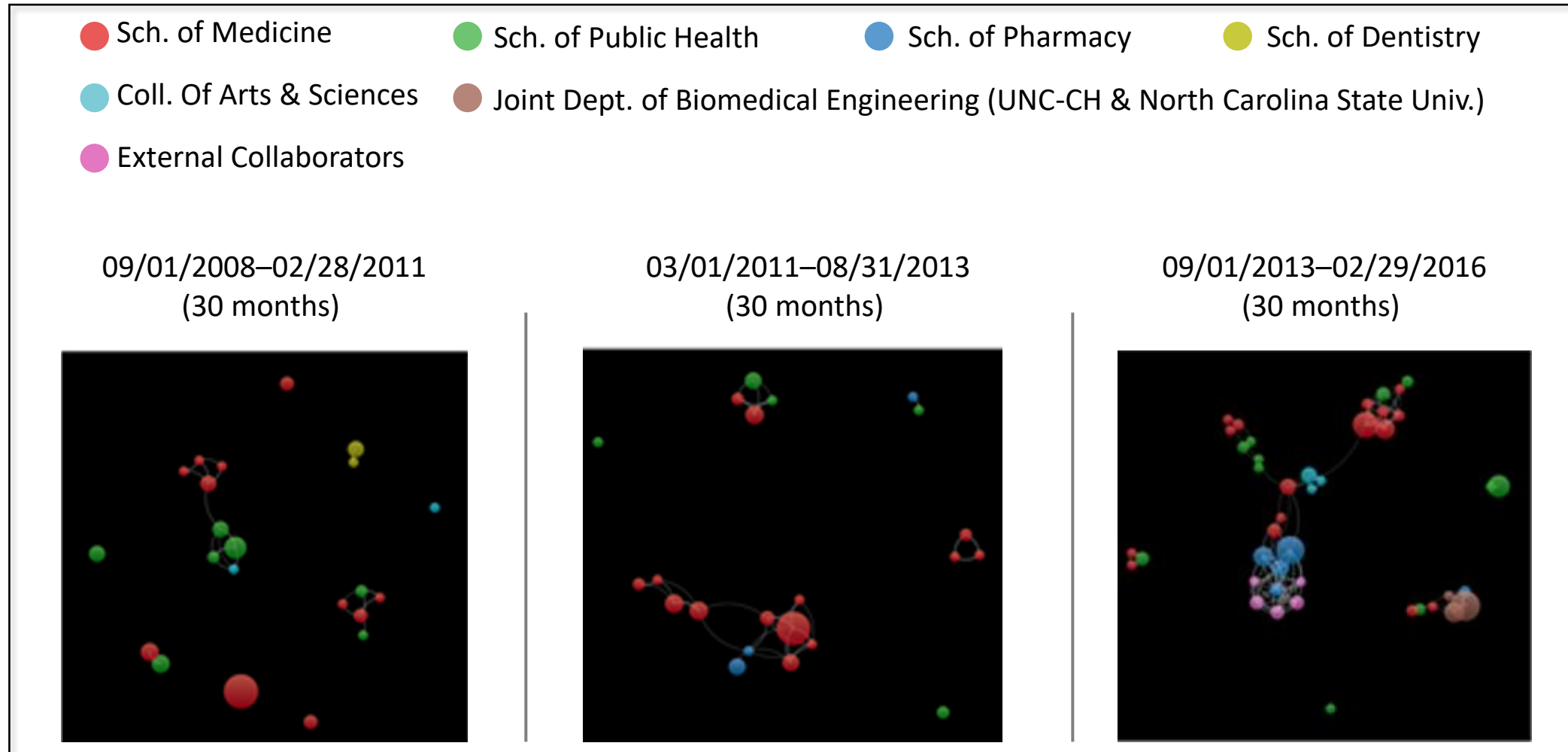


Figure 13. Co-authorship of most published researchers in each 30-month period (Yu et al. 2020). (Note this figure is only in color and does not appear in Mani et al., 2021.)

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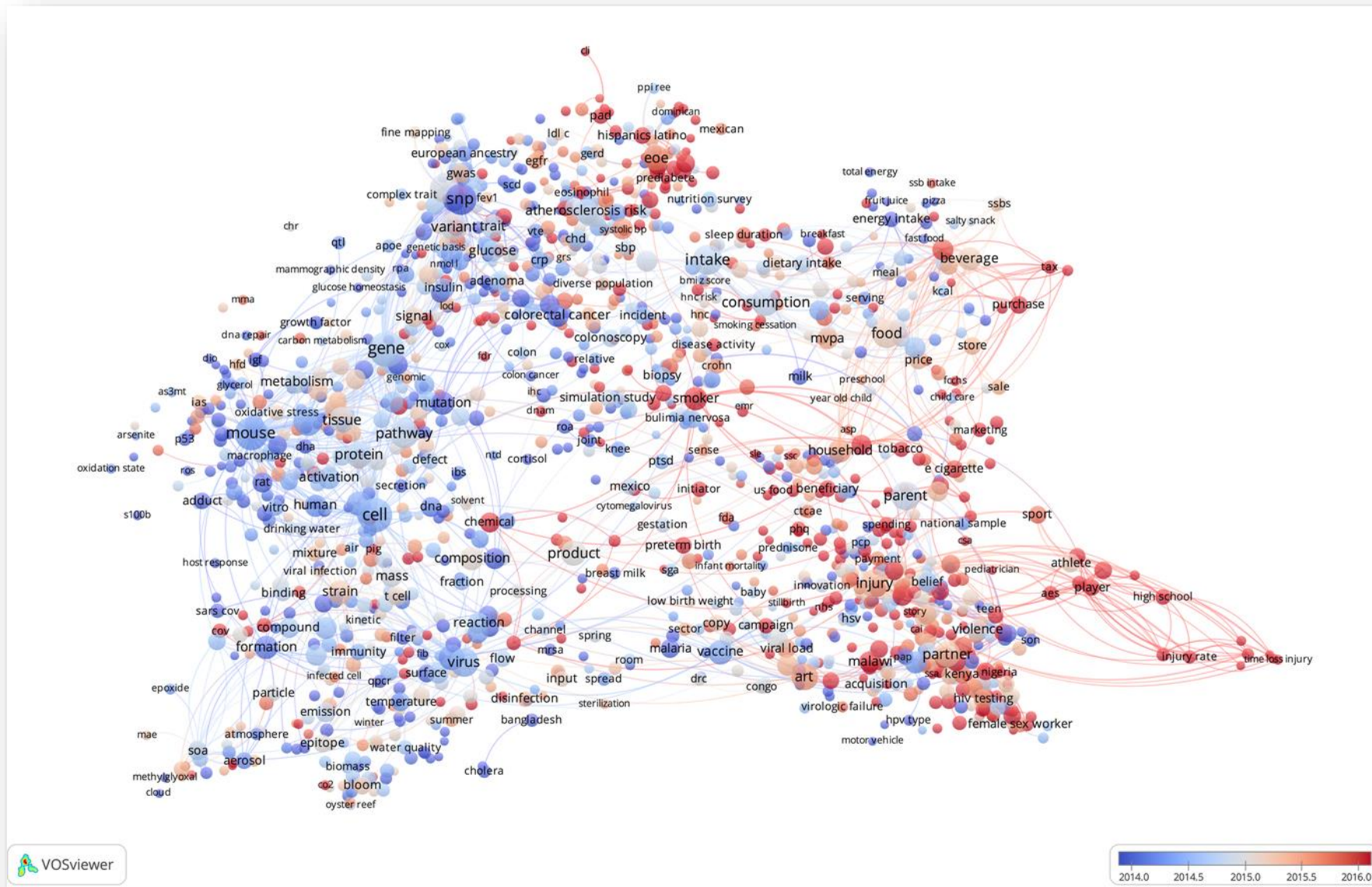


Figure 14. Title and abstract terms from all SPH departments. Color indicates average occurrence across publication years (Hayes and Dodd, 2020). (Note this figure is only in color and does not appear in Mani et al., 2021.)

# Works Cited

- Dodd, A., Hayes, B., Yu, F., & Mani, N. (2018). Leveraging Data Analytics and Visualization to Illustrate Faculty Research Collaboration and Expertise for Graduate School Program Planning. Poster presented at the NIH Bibliometrics and Research Assessment Symposium, August 20-21 in Bethesda, MD.
- Hayes, B. & Dodd, A. (2020). Building a Service Model for Research Data Analytics and Visualization. Poster presented at the Bibliometrics & Research Assessment Symposium 2020, October 7-9, 2020, Online via WebEx.
- Mani, N.S., Hayes, B., Dodd, A., Yu, F., & Cawley, M. (2021). New data-related roles for librarians: Using bibliometric analysis and visualization to increase visibility of research impact. *In Handbook of Research on Knowledge and Organization Systems in Library and Information Science.*
- Xing, Z., Yu, F., Du, J., Walker, J., Paulson, C., Mani, N., & Song, L. (2019). Conversational interface for health – A bibliometric analysis of grants, publications, and patents. *Journal of Medical Internet Research (JMIR)*, 21(11). [doi: 10.2196/14672](https://doi.org/10.2196/14672).
- Yu, F., Van, A., Patel, T., Mani, N., Carnegie, A., Corbie-Smith, G., Carey, T., Buse, J., & Dave, G. (2020). Bibliometrics approach to evaluating the research impact of CTSAs: A pilot study. *Journal of Clinical and Translational Science*, 4(4), 336-344. <https://doi.org/10.1017/cts.2020.29>.